

Ham-Ant Digest Sat, 2 Jul 94 Volume 94 : Issue 208

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Archives of past issues of the Ham-Ant Digest are available (by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: Fri, 1 Jul 1994 22:35:38 GMT
From: taligent!taligent.com!logan@ames.arpa
Subject: A Question on Yagi's.
To: ham-ant@ucsd.edu

Hmm... This antenna wouldn't be made by BOSE would it? :-)

(Just kidding.)

Adios,
Logan

--

The genius of France can be seen at a glance
And it's not in their fabled fashion scene
It's not that they're mean, or their wine, or cuisine
I refer of course to the guillotine
(the French knew how to lynch)
T-Bone Burnett, "I Can Explain Everything"

Date: 1 Jul 94 20:51:17 GMT
From: news-mail-gateway@ucsd.edu
Subject: DB .vs. Celwave
To: ham-ant@ucsd.edu

A few weeks ago I requested comments regarding dual-band antennas for repeater usage on repeaters in very harsh environments. The results of that survey lead me to the conclusion that no suitable dual-band antenna exists for longevity in harsh environments.

The time has come for our ham club to replace our repeater antennas (after 15 years of service, current antennas are both db-220 and phelps-dodge super-stationmaster). We are again discussing the db products 4 bay vs the Celwave PD-200 antennas (VHF 146 range). My local enquires and combined experiences have taught me that the 4 bay (or more) antennas work very well, but need frequent cleaning (yearly). The phelps-dodge antennas seem to be more reliable over years of neglect. We would like to make a good decision.

Has anyone else traveled this path that could offer some opinions?
I'd also appreciate comments from users of small phased beam arrays for repeater antennas (what type of beams, how many, what pattern you were trying to achieve, etc.,etc.)

Thanks

/*

Terry Bartholomew
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*/

Date: 1 Jul 1994 14:26:45 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!wupost!crcnis1.unl.edu!
unlinfo.unl.edu!djw@network.ucsd.edu
Subject: extending "ladder line"
To: ham-ant@ucsd.edu

I have installed a new operating position in the 'ole shack and the 450 ohm "ladder line" or twin lead feeder doesn't make it all the way to the table. Are there any considerations to take into account for extending the cable/twin lead about six feet? I assume I should keep the spacing between the conductors and make sure the soldering on the splice is very well done. Is this enough or should I replace the line all the way to the antenna?? The antenna is a center fed zepp.....

Thanks de Dan djw@unlinfo.unl.edu

OR

WA0JRD@K0KKV.NE

Date: 1 Jul 94 15:27:09 GMT
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!vixen.cso.uiuc.edu!aries!
hawley@network.ucsd.edu
Subject: extending "ladder line"
To: ham-ant@ucsd.edu

djw@unlinfo.unl.edu (daniel wright) writes:

> I have installed a new operating position in the 'ole shack and the
>450 ohm "ladder line" or twin lead feeder doesn't make it all the way
>to the table. Are there any considerations to take into account for
>extending the cable/twin lead about six feet? I assume I should keep
>the spacing between the conductors and make sure the soldering on the

I use double banana plugs. Stick the ladder line wire into the part on the side where you screw down onto the wire, and you have a male or female, your choice, to plug into the next piece. Great for adjusting the length also.

.....NO USER SERVICEABLE PARTS INSIDE.....

Chuck Hawley, KE9UW in Urbana, Illinois

hawley@aries.scs.uiuc.edu

School of Chemical Sciences, Electronic Services
University of Illinois, Urbana-Champaign

Date: Fri, 1 Jul 1994 16:42:22 GMT
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!cs.utexas.edu!convex!news.ssc.gov!
fnnews.fnal.gov!gw1!nntpa!bigtop!longs!n2ic@network.ucsd.edu
Subject: Here's KLM ...
To: ham-ant@ucsd.edu

Just to set the record straight, KLM and Mirage seem to have parted ways.

The current (7/1/94) address for KLM is:

KLM Antennas, Inc.
14792 172nd DR SE #1
Monroe, WA 98272

(206) 794-2923
FAX: (206) 794-0294

Date: Fri, 01 Jul 1994 14:54:00 PST
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!europa.eng.gtefsd.com!
newsxfer.itd.umich.edu!nntp.cs.ubc.ca!mala.bc.ca!epaus!ham!emd@network.ucsd.edu
Subject: Is LArson a good brand of equipment?
To: ham-ant@ucsd.edu

vannossc@ipssmail.sch.ge.com (Scott Van Nostrand) writes:

>Comments?
>
>Thanks.
>
>Scott
>vannossc@ipssmail.sch.ge.com

If you're talking about Larsen Antennas and their line of VHF/UHF mobile
(mostly) antennas, I'd say yes. They're competitively priced, work well, and
are rugged. I've also found Larsen a good company to deal with.

emd@ham.island.net (Robert Smits Ladysmith BC)

Date: 1 Jul 1994 20:42:46 GMT
From: ihnp4.ucsd.edu!usc!nic-nac.CSU.net!channel.ecst.csuchico.edu!psgrain!
news.tek.com!tekgp4.cse.tek.com!royle@network.ucsd.edu
Subject: More on the QST compact loop

To: ham-ant@ucsd.edu

domonkos@access.digex.net (Andy Domonkos):

>. . . A local ham said he made a high voltage cap
>from PVC and copper sheets glued to the pvc tubing (small tubing
>rotating in larger tubing). W/the high voltage in the loop I wonder if
>the PVC will breakdown?

I dunno about the voltage breakdown, but using this capacitor for a small loop would be disastrous from a loss standpoint.

Here's what we're talking about with these small loops:

Some numbers from a quick ELNEC run of a 6 foot diameter loop made from 2" dia pipe at 3.8 MHz (one which I had on file), using a capacitor to resonate it:

With 100 watts in, and a lossless capacitor, the current in the loop is over 40 amps RMS. The voltage across the capacitor is 6.3 kV RMS. The loss due to the RF resistivity of the copper pipe is 2.8 dB or about 48 watts.

With this amount of voltage across the capacitor, the dielectric loss is critical. Polyethylene and PTFE (Teflon) have a dissipation factor of <.0002. If you made a capacitor with a dielectric with DF of .0002, the capacitor loss in this antenna would be 1.8 dB, or 18 watts of the 52 remaining after copper loss. PVC has a dissipation factor of about 0.01. Using this for the capacitor dielectric gives a loss of 14.3 dB, or about 50 of the 52 watts left after copper loss. With air, the dielectric loss is negligible.

As pointed out earlier in this thread, there are no laws of physics which dictate that small loops have to be lossy. But you can bet your joules that if you don't pay *very* careful attention to losses, they sure will be!

73,
Roy Lewallen, W7EL
roy.lewallen@tek.com

Date: Fri, 1 Jul 1994 12:21:01 GMT
From: ihnp4.ucsd.edu!library.ucla.edu!csulb.edu!csus.edu!netcom.com!
greg@network.ucsd.edu
Subject: More on the QST compact loop antenna
To: ham-ant@ucsd.edu

In article <Bdi4kiubG2rU067yn@access.digex.net> domonkos@access.digex.net (andy

domonkos) writes:

>

>I plan on using the loading var. cap. (200pf) I stripped out of an old
>Heath DX60b, do you think that will handle a full 100 watts?

The DX60B was rated at 90 watts INPUT thus maybe 50 out, CW. The loading cap was probably rated for about that.

Add to that that a loop is a high-voltage, low-current beastie.

In other words, NO!

Greg

Date: Fri, 1 Jul 1994 12:56:12 GMT

From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!noc.near.net!usenet.elf.com!
rpi!psinnntp!arrl.org!zlau@network.ucsd.edu

Subject: More on the QST compact loop antenna

To: ham-ant@ucsd.edu

andy domonkos N3LCW (domonkos@access.digex.net) wrote:

: I am planning on building the 40M loop. Could you give the exact dimension
: you used on the Loops and the ratings and value of the tuning cap. Also,
: are you using a motor to remote tune it?

: I plan on using the loading var. cap. (200pf) I stripped out of an old
: Heath DX60b, do you think that will handle a full 100 watts? I have an
: AEA Isoloop 10-30 and it's tuning cap is HUGE. Thanks for your work on
: the 40M version...

I'm not sure that tuning capacitor will work properly--a difficulty is that you typically need a very high quality capacitor with low loss to get the claimed efficiency. The easiest way to find out may be to just go ahead and build it. Ideally, the tuning should be real sharp, just like the equations (like those in the Antenna book) say it should be. If it is much broader than it should be, you are probably losing a lot of power someplace. Interestingly, QST initially reported that the loops really didn't work well, since they failed to use sufficiently low loss components (in the 1960s). Of course, back in the 60s people mostly designed high voltage, high impedance circuits, which didn't need parts with extremely low resistive losses. Working with these loops is more like working with 30 amp power supplies....

circuits.

--

Zack Lau KH6CP/1 2 way QRP WAS
 8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

Date: Sat, 2 Jul 1994 02:17:48 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!col.hp.com!srigenprp!alanb@network.ucsd.edu
Subject: More on the QST compact loop antenna
To: ham-ant@ucsd.edu

Andy Domonkos (domonkos@access.digex.net) wrote:

: A local ham siad he made a high voltage cap
: from PVC and copper sheets glued to the pvc tubing (small tubing
: rotating in larger tubing). W/the high voltage in the loop I wonder if
: the PVC will breakdown?

PVC is a high-loss dielectric at RF frequencies. To get a high-Q capacitor, use air dielectric or at least some low-loss material like polyethylene.

AL N1AL

Date: 1 Jul 1994 17:22:38 GMT
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!news.msfc.nasa.gov!
sims@network.ucsd.edu
Subject: Where is the best place to install a low pass filter?
To: ham-ant@ucsd.edu

tom_boza@ccm.hf.intel.com writes:

>Can someone tell me where the best place is to install my
>Drake 1KW low pass filter?

- > 1) Between my HF transceiver and my 1KW RF amp
- > 2) Between my 1 KW RF amp and my 1KW antenna tuner
- > 3) Between my 1KW antenna tuner and my antenna
- > 4) Sell it at the next ham fest
- > 5) Anywhere after the transceiver

>Thanks, 73s Tom WB7ASR...

>tom_boza@ccm.hf.intel.com

The answer is 1. The reason is as follows:

The transceiver is solid state and thus generates the most harmonics due to non-linear characteristics (this applies to all amplifiers). So if the filter is between the rig and amp the harmonics from the rig will be attenuated and thus not have any chance to be amplified by the amp.

The second reason is (assuming a tube amp) that the amplifier basically has a matching network on both the input and output of the amplifier, what you are doing when you tune the amplifier is matching the output impedance of the tubes (the amplifier) to the antenna (50 ohms). Since this tuning process has a small operating range (also known as bandwidth) the harmonics never make it out of the amplifier.

Hope this helps.

Herb

W. Herb Sims	sims@sauron.msfc.nasa.gov
NASA/MSFC/EB56	sims@saruman.msfc.nasa.gov
Huntsville, AL 35812	sims@avdms8.msfc.nasa.gov
KU0C	Voice (205) 544 8581
PP-ASEL-IA	FAX (205) 544 7499

Date: 1 Jul 1994 19:40:03 GMT
From: ihnp4.ucsd.edu!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!
yeshua.marcam.com!news.kei.com!ssd.intel.com!chnews!scorpion.ch.intel.com!
jbromley@network.ucsd.edu
Subject: Where is the best place to install a low pass filter?
To: ham-ant@ucsd.edu

tom_boza@ccm.hf.intel.com (Tom Boza, WB7ASR) writes:

>>Can someone tell me where the best place is to install my
>>Drake 1KW low pass filter?

- >> 1) Between my HF transceiver and my 1KW RF amp
- >> 2) Between my 1 KW RF amp and my 1KW antenna tuner
- >> 3) Between my 1KW antenna tuner and my antenna

>> 4) Sell it at the next ham fest
>> 5) Anywhere after the transceiver

In article <2v1jcu\$j87@hammer.msfc.nasa.gov>,
Herb Sims, KU0C <sims@sauron.msfc.nasa.gov> wrote:

>The answer is 1. The reason is as follows:

>The transceiver is solid state and thus generates the most harmonics
>due to non-linear characteristics (this applies to all amplifiers).
>So if the filter is between the rig and amp the harmonics from
>the rig will be attenuated and thus not have any chance to be
>amplified by the amp.

I don't think it is necessarily true that solid-state -> higher harmonics.

Regardless of this, though, modern transceivers have a bank of
low-pass filters that are switched into the output line dependent on
operating frequency. These filters assure that the transceiver
exceeds Part 97 requirements over the entire spectrum.

>The second reason is (assuming a tube amp) that the amplifier
>basically has a matching network on both the input and output of the
>amplifier, what you are doing when you tune the amplifier is matching
>the output impedance of the tubes (the amplifier) to the antenna (50
>ohms). Since this tuning process has a small operating range (also
>known as bandwidth) the harmonics never make it out of the amplifier.

Well, imperfect components rear their ugly heads. The tuning networks
you describe are made out of solenoidal coils and wire-connected
capacitors that become something else at VHF. These components don't
supply the rejection you might think they do up there at the 23rd
harmonic. And he *was* asking about a TVI filter. Those are designed
with a 41 MHz corner, at least an 80 dB/decade roll-off, and shielded
compartments between sections.

However, in this era of zero-bias triodes, most amplifiers run class
B (linear), even for CW. So the prime culprit in amateur-caused
TVI cases, the over-driven, class-C operated, plate-modulated final
tube sitting on a breadboard has, thankfully, faded into history.
Today's HF rigs, even the max. power jobs, are pretty clean well
up through VHF.

I still opt for 2), although it's more of an insurance policy.

Jim Bromley, W5GYJ <jbromley@sedona.intel.com>

Date: 1 Jul 1994 12:50:34 -0400
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!news.intercon.com!
news1.digex.net!digex.net!not-for-mail@network.ucsd.edu
To: ham-ant@ucsd.edu

References <2usnbp\$bp7@xap.xyplex.com>, <Bdi4kiubG2rU067yn@access.digex.net>,
<gregCs9Gz1.6t6@netcom.com>.n
Subject : Re: More on the QST compact loop antenna

In article <gregCs9Gz1.6t6@netcom.com>, Greg Bullough wrote:
> In article <Bdi4kiubG2rU067yn@access.digex.net> domonkos@access.digex.net (andy
domonkos) writes:
> >
> >I plan on using the loading var. cap. (200pf) I stripped out of an old
> >Heath DX60b, do you think that will handle a full 100 watts?
>
> The DX60B was rated at 90 watts INPUT thus maybe 50 out, CW. The loading
> cap was probably rated for about that.
>
> Add to that that a loop is a high-voltage, low-current beastie.
>
> In other words, NO!
>
> Greg

That's what I suspected. A local ham siad he made a high voltage cap
from PVC and copper sheets glued to the pvc tubing (small tubing
rotating in larger tubing). W/the high voltage in the loop I wonder if
the PVC will breakdown?

Andy

Date: 1 Jul 1994 18:18:22 GMT
From: ihnp4.ucsd.edu!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!
yeshua.marcam.com!news.kei.com!ssd.intel.com!chnews!scorpion.ch.intel.com!
jbromley@network.ucsd.edu
To: ham-ant@ucsd.edu

References <2usnbp\$bp7@xap.xyplex.com>, <Bdi4kiubG2rU067yn@access.digex.net>,
<gregCs9Gz1.6t6@netcom.com>co
Subject : Re: More on the QST compact loop antenna

In article <gregCs9Gz1.6t6@netcom.com>,
Greg Bullough <greg@netcom.com> wrote:

[Commenting on using a DX-60 loading capacitor to tune an]
[electrically small loop antenna.]

>Add to that that a loop is a high-voltage, low-current beastie.

>

>In other words, NO!

Just a nit, but it really is a high-impedance, high-current beastie.
Which means you get the worst of both worlds, high voltage across
the reactances due to high circulating currents flowing through
them. So you have to have a high-voltage, high-current (high-Q)
capacitor.

The way the loop obtains its radiation efficiency (such as it is)
is by causing a large circulating current to flow through its small
radiation resistance. The circulating current comes from resonating
the loop's inductance with a capacitor at the frequency of interest.

Jim Bromley, W5GYJ <jbromley@sedona.intel.com>

End of Ham-Ant Digest V94 #208
